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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/708,797 | 11/07/2000 | Andreas Schilling | 18235-04726 | 2506 |

7590

02/23/2005

Susan Yee
DARR & FERRELL
2225 E. Bayshore Road
Suite 200
Palo Alto, CA 94303

EXAMINER

BRIER, JEFFERY A

ART UNIT

PAPER NUMBER

2672

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

RECEIVED

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Technology Center 2600

Office Action Summary

Application No.

09/708,797

Applicant(s)

SCHILLING ET AL.

Examiner

Jeffery A Brier

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 65,66,72,73 and 78-93 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 65,66,72,73 and 78-93 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 9/29/03.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Detailed Action

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/18/2004 has been entered.

Response to Amendment

2. The amendment filed on 6/25/2004 has been entered.

Response to Arguments

3. Applicants argument filed on 6/25/2004 have been fully considered, and they are persuasive to overcome the 103 rejection based upon Kelley et al. and Williams, L., "Pyramidal Parametrics" and the 103 rejection based upon Kelley et al., Williams, and further in view of Cosman.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 65, 66, 72, 73, and 78-93 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. This application is directed to a useful, concrete, and tangible result of generating a graphical image having generated pixel colors, however, these claims are not. These claims are directed to manipulating abstract ideas. *State Street Bank & Trust Co. v. Signature Financial Group Inc.* (CA FC) 47 USPQ2d 1596, 1603 (7/23/1998). *AT&T Corp. v. Excel Communications Inc.* (CA FC) 50 USPQ2d 1447. On page 1603 first paragraph the CAFC wrote in *State Street*:

Under *Benson*, this may have been a sufficient indicium of nonstatutory subject matter. However, after *Diehr* and *Alappat*, the mere fact that a claimed invention involves inputting numbers, calculating numbers, outputting numbers, and storing numbers, in and of itself, would not render it nonstatutory subject matter, unless, of course, its operation does not produce a "useful, concrete and tangible result." *Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557. 7

On page 1603 paragraph labeled [4] the CAFC wrote:

[4] The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to -- process, machine, manufacture, or composition of matter--but rather on the essential characteristics of the subject matter, in particular, its practical utility. Section 101 specifies that statutory subject matter must also satisfy the other

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"conditions and requirements" of Title 35, including novelty, nonobviousness, and adequacy of disclosure and notice.

See *In re Warmerdam*, 33 F.3d 1354, 1359, 31 USPQ2d 1754, 1757-58 (Fed. Cir. 1994).

Re claims 65, 66, 72, and 78:

Claim 65:

This method claim claims manipulating an abstract idea without any concrete, useful, and tangible result. The computer generated object is an abstract computer object, not a real world tangible result. Similarly the claimed texture, texture map, specular reflected light intensity, specular reflectance coefficient and specular reflectance coefficient map are abstract.

Claim 66:

This claim abstractly claims a mathematical formula without producing a concrete, useful, and tangible result.

Claim 72:

This claim is an electronically-readable medium storing a program for permitting a computer to perform in essence the method set forth in claim 65. As stated by the CAFC in *State Street* "The question of whether a claim encompasses statutory subject matter should not focus on which of the four categories of subject matter a claim is directed to -- process, machine, manufacture, or composition of matter--but rather on the essential characteristics of the subject matter, in particular, its practical utility." This claim merely claims a computer program that permits a computer to perform an abstract process without any useful and concrete results, see the reasons given for claim 65.

Claim 78:

This claim is an electronically-readable medium storing a program for permitting a computer to perform in essence the method set forth in claim 66. This claim merely claims a computer program that permits a computer to perform a mathematical formula without producing a concrete, useful, and tangible result.

Claim 73:

This claim is an electronically-readable medium storing a program for permitting a computer to perform a method that does not produce a useful, concrete and tangible result. The courts have held the step of displaying a calculation as a gray code scale to be non-statutory. *In re Abele*, 684 F.2d 902, 908, 214 USPQ 682, 687 (CCPA 1982). The claimed color is a gray code scale that is eventually displayed. *Abele*, 684 F.2d at 908, 214 USPQ at 687 stated "The specification indicates that such attenuation data is available only when an X-ray beam is produced by a CAT scanner, passed through an object, and detected upon its exit. Only after these steps have been completed is the algorithm performed, and the resultant modified data displayed in the required format.". This court case indicated a safe harbor exists when the claimed process is a method of displaying X-ray attenuation data as a signed gray scale signal in a "field" using a particular algorithm, where the antecedent steps require generating the data using a particular machine (e.g., a computer tomography scanner). As stated above the computer generated object, the texture map, and detail map, are abstract non-tangible computer objects. The determining a detail color, determining a texture color, and combining steps are similar to that which was decided in *Abele*. One pixel's color is

being controlled by the claimed process. This is merely determining the result of the mathematical operation in the method. Abele teaches this is non-statutory. This claim needs to be amended to claim a practical utility in a "field" using the claimed algorithm.

The preamble states "an electronically-readable medium storing a program for permitting a computer to perform a method". It is not clear if the stored program causes the computer to perform the claimed method or just allows the computer to perform the method such as an operating system.

Claims 79-85:

These dependent claims do not add a practical utility to independent claim 73. They also do not correct the problem with the preamble.

Claims 86-93:

These method claims correspond to electronically-readable medium claims 73 and 79-85. These claims are broader than claims 73 and 79-85 because these claims are method claims which claims the same steps as claimed in claims 73 and 79-85 without the electronically-readable medium limitations. Therefore these claims are non-statutory for the reasons given for claims 73 and 79-85.

Supporting excerpts from MPEP 2106 follows.

A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. See *In re Warmerdam*, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also *Schrader*, 22 F.3d at 295, 30 USPQ2d at 1459. Office personnel have the burden to establish a *prima facie* case that the claimed invention as a whole is directed to solely an abstract idea or to manipulation of abstract ideas or

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does not produce a useful result. Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 U.S.C. 101. Compare *Musgrave*, 431 F.2d at 893, 167 USPQ at 289; *In re Foster*, 438 F.2d 1011, 1013, 169 USPQ 99, 101 (CCPA 1971). Further, when such a rejection is made, Office personnel must expressly state how the language of the claims has been interpreted to support the rejection.

Federal courts have held that 35 U.S.C. 101 does have certain limits. First, the phrase "anything under the sun that is made by man" is limited by the text of 35 U.S.C. 101, meaning that one may only patent something that is a machine, manufacture, composition of matter or a process. See, e.g., *Alappat*, 33 F.3d at 1542, 31 USPQ2d at 1556; *Warmerdam*, 33 F.3d at 1358, 31 USPQ2d at 1757 (Fed. Cir. 1994). Second, 35 U.S.C. 101 requires that the subject matter sought to be patented be a "useful" invention. Accordingly, a complete definition of the scope of 35 U.S.C. 101, reflecting Congressional intent, is that any new and useful process, machine, manufacture or composition of matter under the sun that is made by man is the proper subject matter of a patent.

The subject matter courts have found to be outside the four statutory categories of invention is limited to abstract ideas, laws of nature and natural phenomena.

1. Nonstatutory Subject Matter

Claims to computer-related inventions that are clearly nonstatutory fall into the same general categories as nonstatutory claims in other arts, namely natural phenomena such as magnetism, and abstract ideas or laws of nature which constitute "descriptive material." Abstract ideas, *Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759, or the mere manipulation of abstract ideas, *Schrader*, 22 F.3d at 292-93, 30 USPQ2d at 1457-58, are not patentable. Descriptive material can be characterized as either "functional descriptive material" or "nonfunctional descriptive material." In this context, "functional descriptive material" consists of data structures and computer programs which impart functionality when employed as a computer component. (The definition of "data structure" is "a physical or logical relationship among data elements, designed to support specific data manipulation functions." The New IEEE Standard Dictionary of Electrical and Electronics Terms 308 (5th ed. 1993).) "Nonfunctional descriptive material" includes but is not limited to music, literary works and a compilation or mere arrangement of data.

Both types of "descriptive material" are nonstatutory when claimed as descriptive material *per se*. *Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759. When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory in most cases since use of technology permits the function of the descriptive material to be

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realized. Compare *In re Lowry*, 32 F.3d 1579, 1583-84, 32 USPQ2d 1031, 1035 (Fed. Cir. 1994) (claim to data structure stored on a computer readable medium that increases computer efficiency held statutory) and *Warmerdam*, 33 F.3d at 1360-61, 31 USPQ2d at 1759 (claim to computer having a specific data structure stored in memory held statutory product-by-process claim) with *Warmerdam*, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure *per se* held nonstatutory). When nonfunctional descriptive material is recorded on some computer-readable medium, it is not statutory since no requisite functionality is present to satisfy the practical application requirement. Merely claiming nonfunctional descriptive material stored in a computer-readable medium does not make it statutory. Such a result would exalt form over substance.

In practical terms, claims define nonstatutory processes if they:

- consist solely of mathematical operations without some claimed practical application (i.e., executing a "mathematical algorithm"); or
- simply manipulate abstract ideas, e.g., a bid (*Schrader*, 22 F.3d at 293-94, 30 USPQ2d at 1458-59) or a bubble hierarchy (*Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759), without some claimed practical application.

A process that merely manipulates an abstract idea or performs a purely mathematical algorithm is nonstatutory despite the fact that it might inherently have some usefulness. In *Sarkar*, 588 F.2d at 1335, 200 USPQ at 139, the court explained why this approach must be followed:

No mathematical equation can be used, as a practical matter, without establishing and substituting values for the variables expressed therein. Substitution of values dictated by the formula has thus been viewed as a form of mathematical step. If the steps of gathering and substituting values were alone sufficient, every mathematical equation, formula, or algorithm having any practical use would be *per se* subject to patenting as a "process" under 101. Consideration of whether the substitution of specific values is enough to convert the disembodied ideas present in the formula into an embodiment of those ideas, or into an application of the formula, is foreclosed by the current state of the law.

For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts. See *Alappat*, 33 F.3d at 1543, 31 USPQ2d at 1556-57 (quoting *Diamond v. Diehr*, 450 U.S. at 192, 209 USPQ at 10). See also *Alappat* 33 F.3d at 1569, 31 USPQ2d at 1578-79 (Newman, J., concurring) ("unpatentability of the principle does not defeat patentability of its practical applications") (citing *O'Reilly v. Morse*, 56 U.S. (15 How.) at 114-19). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of

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producing something that is concrete, tangible and useful. See *AT&T*, 172 F.3d at 1358, 50 USPQ2d at 1452. Likewise, a machine claim is statutory when the machine, as claimed, produces a concrete, tangible and useful result (as in *State Street*, 149 F.3d at 1373, 47 USPQ2d at 1601) and/or when a specific machine is being claimed (as in *Alappat*, 33 F.3d at 1544, 31 USPQ2d at 1557 (in banc)). For example, a computer process that simply calculates a mathematical algorithm that models noise is nonstatutory. However, a claimed process for digitally filtering noise employing the mathematical algorithm is statutory.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 65, 66, 72, 73, and 78-93 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 65:

This claim claims "a specular reflectance coefficient map associated with a texture map of the texture" it is not clear how the map is associated with a texture map. Is it a part of the texture map? Is it the only map in the texture map? The specification does not assist in determining the meaning of a map associated with a texture map, see page 19 lines 12-16. Page 19 lines 20-22 state:

The reflectance map is accessed at the same coordinates as the texture map. Using the map linking technique described below in Section 14, this causes no additional overhead for the rasterizer.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26

USPQ2d 1057 (Fed. Cir. 1993). Therefore the meaning of associated with a texture map is unclear. It may not mean that which is described at page 19 lines 20-22. If applicant intends to claim this then applicant needs to amend claim 65 to claim the association is the specular reflectance map is accessed at the same coordinates as the texture map.

Claim 66:

This dependent claim and parent claim 65 have the same above noted problems.

Claims 72 and 78:

These claims have the same problems that claims 65 and 66 have.

Claims 73 and 79-93:

Claim 73 at line 5 claims accessing a texture map, at line 6 claims accessing a detail map and at line 11 claims associating at least one texel of the texture map with a region of the detail map. The specification on page 20 lines 13-27 describes assessing the detail map 906 and then accessing the texture map 910. See figures 9(a) and 9(b). Thus, the order in which the claims access the detail map and texture map are reversed. One or the other needs an amendment, preferably the claim. The associating step is indefinite because the only associating performed is by the offset maps which occurs before the detail map is accessed. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore the meaning of the associating step is unclear since in the claim it occurs after the detail map has been accessed. Claim 86 claims the same method that claim

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73 claims and has the same problems that is present in claim 73. Dependent claims 79-85 and 87-93 do not correct the problems of their parent claims.

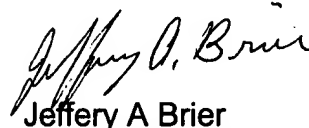
8. A prior art rejection cannot be made because the metes and bounds of the claims are not definite and because the specification does not fully teach the claims. Thus, an indication of allowability would be premature. In re Steele, 305 F.2d 859, 134 USPQ 292 (CCPA 1962) (it is improper to rely on speculative assumptions regarding the meaning of a claim and then base a rejection under 35 U.S.C. 103 on these assumptions).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffery A Brier whose telephone number is 703-305-4723 until the move and after the move the telephone number will be 571-272-7656. The examiner can normally be reached on M-F from 6:30 to 3:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Razavi, can be reached at (703) 305-4713). The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Jeffery A. Brier". The signature is written in a cursive, flowing style.

Jeffery A Brier
Primary Examiner
Art Unit 2672



IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Andreas Schilling et al.

SERIAL NO.: 09/708,797

FILED: November 7, 2000

TITLE: System and Method for Mapping Textures onto Surfaces
of Computer-Generated Objects

EXAMINER: Havan

GROUP ART UNIT: 2672

ATTY.DKT.NO.: PA1746 (as amended)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

LIST OF CO-PENDING APPLICATIONS
THAT MAY BE DIRECTED TOWARD SIMILAR SUBJECT MATTER

| Examiner's Initials | Serial Number | First-Named Inventor | Title | Filing Date |
|--------------------------|------------------|-------------------------|---|---------------------|
| JB | 09/708,775 | Schilling et al. | System and Method for Mapping Textures onto Surfaces of Computer- Generated Objects | November 7, 2000 |
| Examiner's Signature: | Jeffrey A. Brier | | | Date 2/15/05 |

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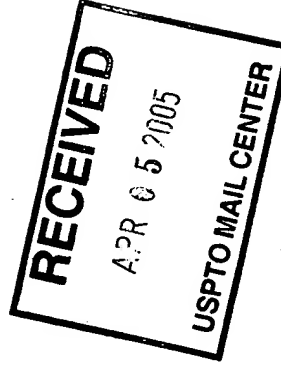
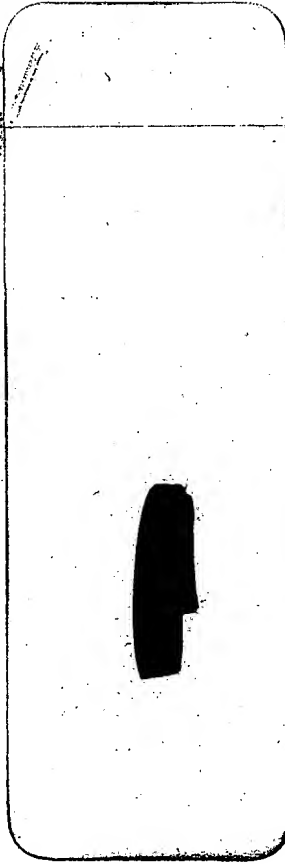
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